



DII COE and the Air Force DoDIIS Infrastructure

An Overview from Conception to Date

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Overview

- What is the DII COE?
 - Who mandates it?
 - The DII COE theory
 - Why the theory makes sense
 - Flaws in the theory
 - What is Segmentation?
 - Flaws in Segmentation philosophy
 - The DII COE developers toolkit
 - The DII COE timeline (conception to date)
 - 497th involvement from the beginning



Overview (continued)

- What is AFDI?
- Why is the Air Force building it?
- AFDI timeline
- Quick AFDI Status
- The bigger AFDI picture
 - Overall AFDI Architecture
 - A single interoperable infrastructure
 - Why?
 - The AFDI Goal
 - How far along we are
- Questions?



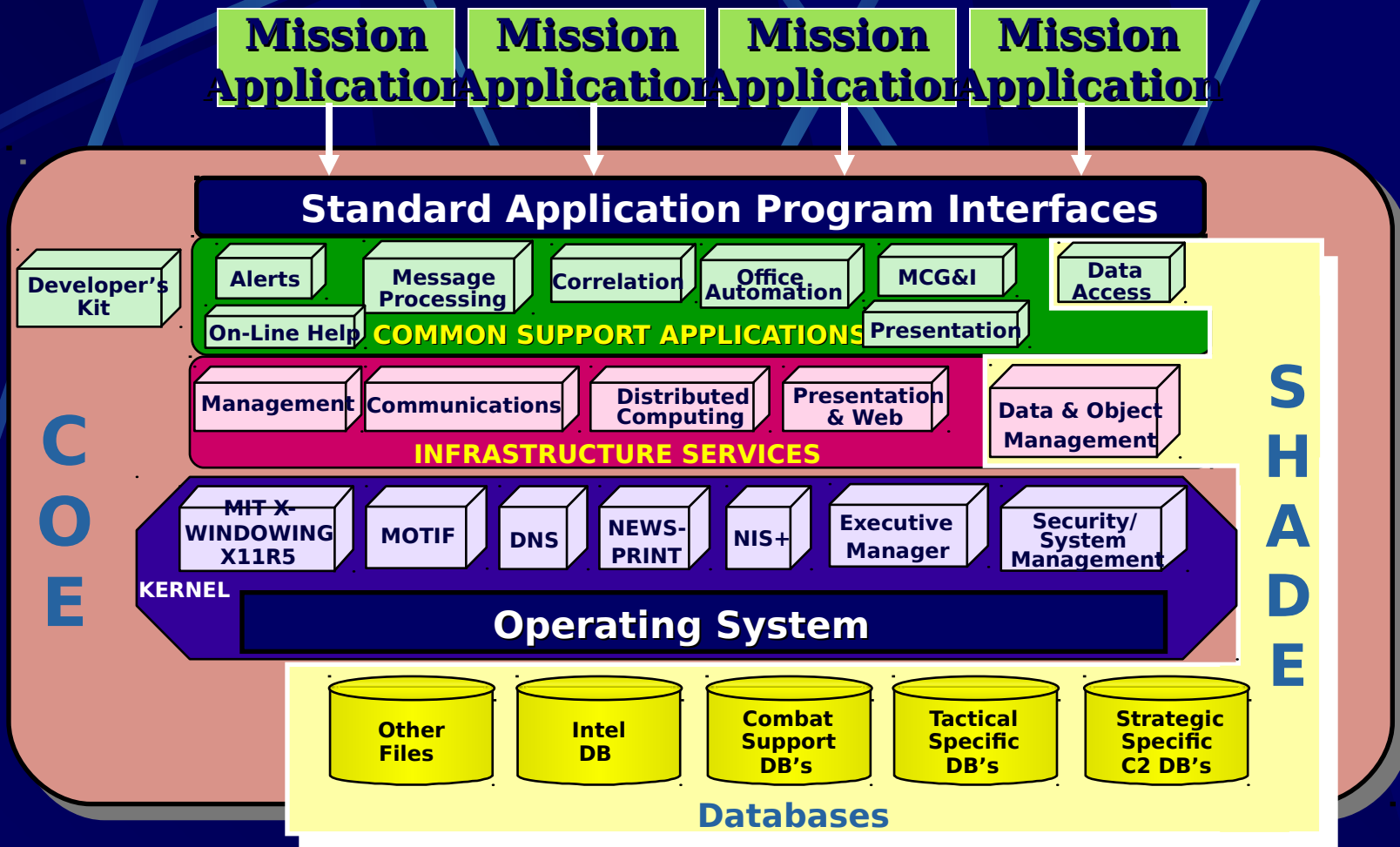
What is the DII COE?

- DII COE is
 - An architecture
 - An approach
 - A collection of reusable software
 - A software infrastructure
 - A set of guidelines and standards
- DII COE is mission application independent

***“The DII COE is *not* a system;
it is a *foundation* for building a shared
system.”***

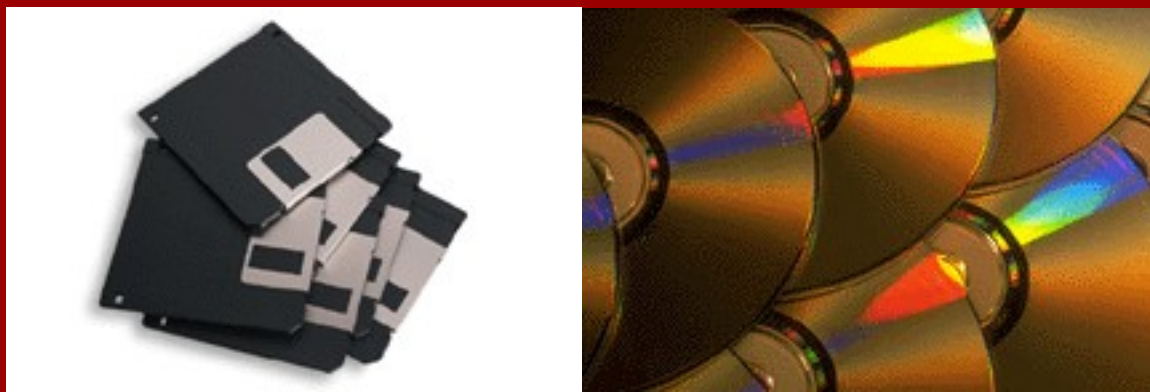


What is the DII COE? (continued)





What is the DII COE? (continued)



COE as delivered by DISA

**When you order a DII COE release,
this is what you get**



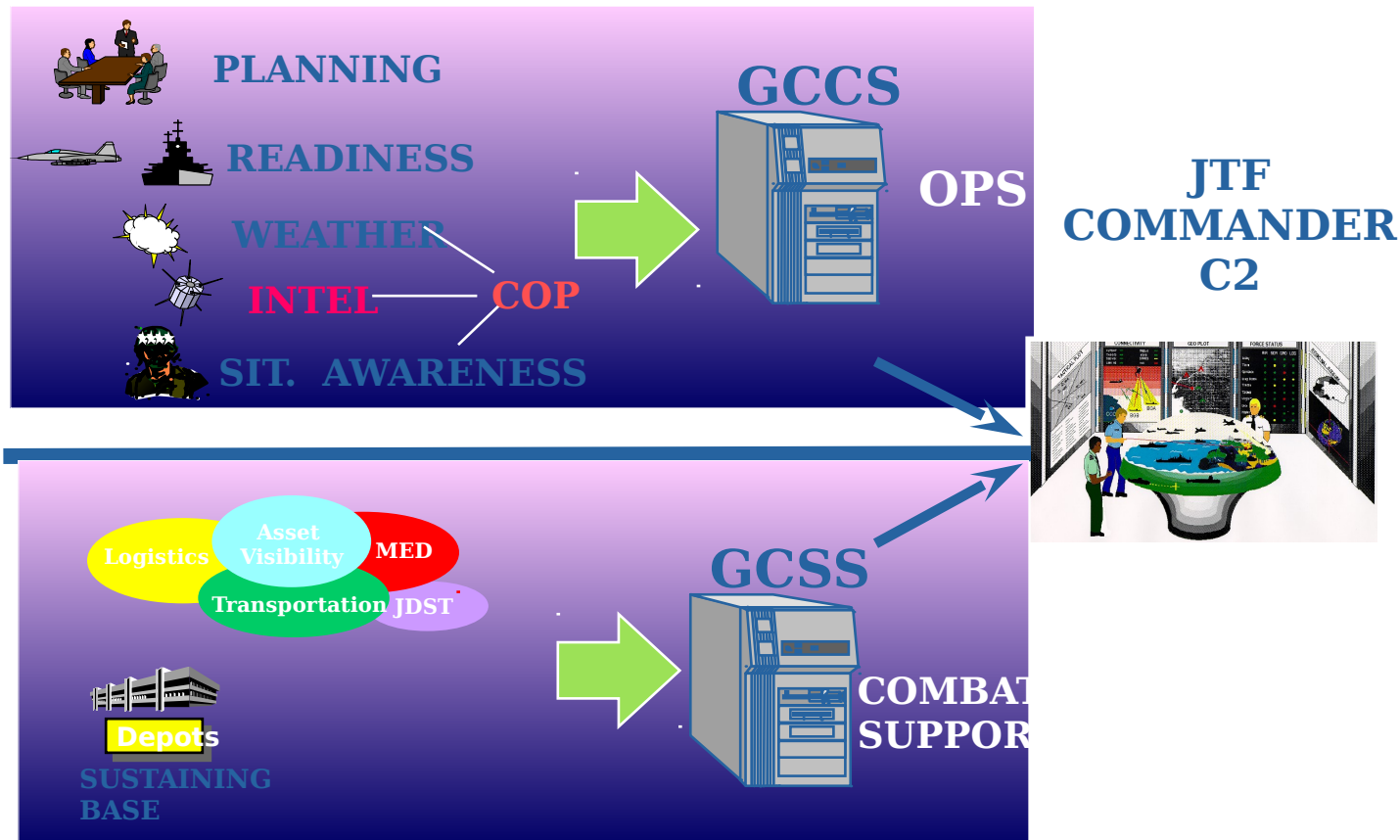
Who mandates it?

- Everybody!!

- Office of Assistant Secretary of Defense (OASD) memorandum 23 May 1997
- Defense Planning Guidance 1997 - 2000
- Joint Technical Architecture (JTA)
- DoDIIS Management Board (DoDIIS Instructions)
- DoDIIS Profile of the JTA and DII COE
- Intelligence Program Decision Memorandum, Instructions (IPDM, I)



The DII COE Theory (continued)





The DII COE Theory

Fully Integrated Information

Capabilities/Force List

Unit	C	HEAD ²
11th TFW	C+6	C+6
2nd MEF	C+7	C+7
82nd Airborne Division	C+9	C+9
Vinson CVBG	C+10	C+9
Hq XVIII Corps	C+11	C+12
3rd Mechanized Division	C+17	C+20
XVIII COSCOM	C+20	C+22
XVIII Arty Bde	C+23	C+23
16th ACR (TX ANG)	C+25	C+48
52nd Mech Div (CA ANG)	C+30	C+55
Armored Division	C+40	TBD

1. CINC's Required Date
2. Estimated Arrival Date

Commander's Intent:

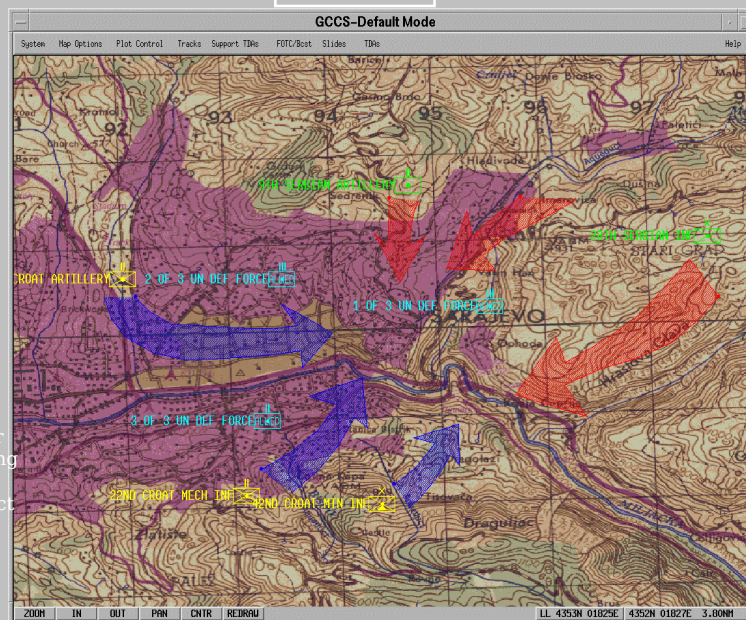
Delay, C - C+10. Use In-Theater Assets; Support RSOI of incoming units and reinforcements.
 Defend, C+11 - C+TBD. Conduct mobile defense with 3 Division equivalents, 2 TFW and 2 CVBG.
 Attack, TBD. Conduct offensive operations using 6 Division equivalents, 2 TFW and 2 CVBG

C	+ 10
M	+ 5
D	--

MISSION: Deter aggression by Badlandia Forces; On order attack to restore status quo ante bellum.

Operational Posture: Defend

Relative Combat Power	OPFOR	JTF HUSKY		
		US	Allied	Total
Troops	300,000	54,000	47,000	101,000
Tanks	1600	116	232	348
IEV	3200	256	270	526
Artillery	600	168	72	240
Tactical Aircraft	58	177	32	209



Sustainment Logistics

CLASS	Plan DOS	Actual DOS
I - Rations	30	34
II - General Support Items	25	26
III - Fuel & Lubricants	20	18
IV - Engineer	20	10
V - Ammo	30	14
VI - Personal Items	30	22
VII - Major End Items	20	8
VIII - Medical	20	18
IX - Repair Parts	25	18
X - Non-Mil Items	20	16
Personnel		
All intheater units at Auth Strength		

Any User, Any Box, Anywhere, One Picture!



Why the Theory makes sense

- A Common Operating Environment promotes interoperability
 - Any user, any box, anywhere... One Picture
 - Like applications produce common data formats
- Common applications and Versions means Enterprise licensing throughout DOD
 - Saves on IT Acquisitions
 - Saves on training



Flaws in the Implementation

- ***“Build a little, test a little, field a lot”***

turns into... build a little, test a little, fix a lot!



What is Segmentation?

- A logically coupled set of functions packaged for installation by the COE tools
 - Directory structure compliance
 - Naming convention compliance
 - Runtime compliance
 - Services compliance
 - User interface compliance
 - Interoperability compliance



The DII COE Developers Toolkit

- The COE developers toolkit used to segment and verify applications
 - CalcSpace
 - Calculates segment disk space and populates SegInfo
 - MakeAttribs
 - Populates "Files" directive in SegInfo
 - ConfigDef
 - Creates a configuration definition based on a collection of segments



The DII COE Developers Toolkit (continued)

- MakeInstall
 - Creates the segment media
- TestInstall
 - Tests segment installation
 - This really installs the segment (not a test)
- ConvertSeg
 - Converts GCCS, GCCS-M segments to DII COE format
- VerifySeg
 - Verifies correct segmentation
 - Must be run against segment, MakeInstall will not create segment media unless VerifySeg has run error free



Flaws in Segmentation philosophy

- DII COE Developers Toolkit and the COEInstaller
 - Command line driven, toolset
 - Required for COE integration
 - The COE only understands Segmented applications
 - Not Segmented apps = integration nightmare
 - Applications not registered with the COE data structure (Common Data Store)
 - Segmented apps in a non-Segmented environment = integration nightmare
 - Non-Segmented environment means no COEInstaller



Flaws in Segmentation philosophy (continued)

- Turns COTS into GOTS
 - Segmented applications are no longer what you can buy “Off The Shelf”
- Forces the integrator to utilize the COEInstaller for application installation
 - Makes it extremely difficult to take advantage of native automated OS installation technologies
 - Bottom line... Segmented applications are the only thing the COE understands



The DII COE Timeline

COE is not a new or revolutionary idea

- JMCIS → GCCS → DII COE
- Current DII COE effort began in 1996 as the follow-on to GCCS (GCCS Administration Services +)
 - Name change to DII COE



497th Involvement in the DII COE Evolution

- Present at the initial DII COE (GCCS Management Services +) meetings
 - 19 CSE-SS components chosen by the DISA DII COE Chief Engineer as core DII COE components (entire CSE-SS ISSO Palette in Segmented format)
 - 19 Segments paid for by 497th IG and delivered to DISA
 - DoDIIS Engineer financed by 497th IG to support DII COE integration at DISA OSF (1 year)
 - All but 4 Segments later rejected by new DII COE Chief Engineer
 - 4 DoDIIS Segments eliminated completely from the DII COE 4.x series





497th Involvement in the DII COE Evolution (continued)

- *DMB approves 497th recommendation to Re-Segment core CSE-SS components for DoDIIS site use in migration to DII COE*
 - *DISA rejects this proposal and asks for a DII COE security assessment*
- *DoDIIS performs a security evaluation of the DII COE V3.2 Kernel*
 - *Participants include DISA, DIA, Air Force, Army, Navy*
 - *Recommendation of certifying authorities is that "DII COE V3.2 should not be fielded in an SCI environment and great caution should be taken in fielding in a non-SCI environment"*





497th Involvement in the DII COE Evolution (continued)

- At DISA request, DoDIIS performs a security assessment of DII COE V3.3
 - COE Kernel and COE Component Segments
 - Participants include DISA, NSA, DIA, Air Force, Navy
 - Recommendation of certifying authorities is that *"DII COE V3.3 should not be fielded in an SCI environment"*





What is AFDI?

- A consistent, stable, secure, Air Force architecture based on the principles of the DII COE
 - Founded on the building blocks of the DII COE
 - Enhanced with Air Force required Security and Infrastructure Components
 - Spiral Development cycle for incremental, phased migration
 - Allows Segmented and Non-Segmented applications to co-exist





What is AFDI? (continued)

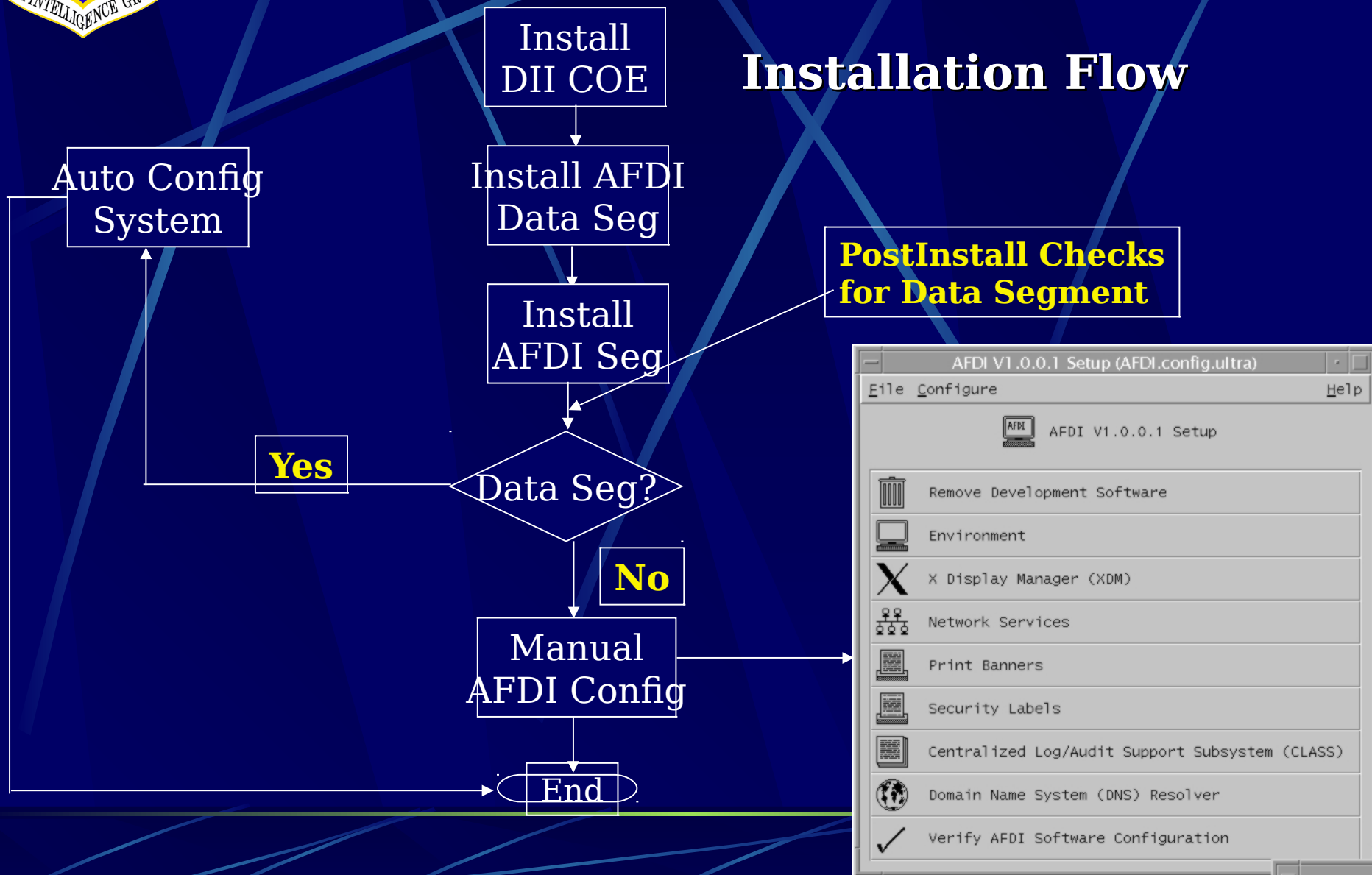
- It's TRANSITION!!
 - Transition Utilities take CSE systems to AFDI systems without the need to manually re-enter system data
 - System is analyzed and key data saved in data segment format
 - DII COE is loaded
 - AFDI data segment is loaded
 - AFDI segment is loaded





What is AFDI? (continued)

Installation Flow





What is AFDI? (continued)

- AFDI is NOT a replacement of the DII COE
 - If your using AFDI, your using the DII COE



What is AFDI? (continued)

C
O
E



AFDI System
Services

Network
Management

Presentation
and Web

Communications

INFRASTRUCTURE SERVICES



AFDI Security
Services

System
Management

Windowing

Print
Services

DNS/LDAP
NIS/NIS+

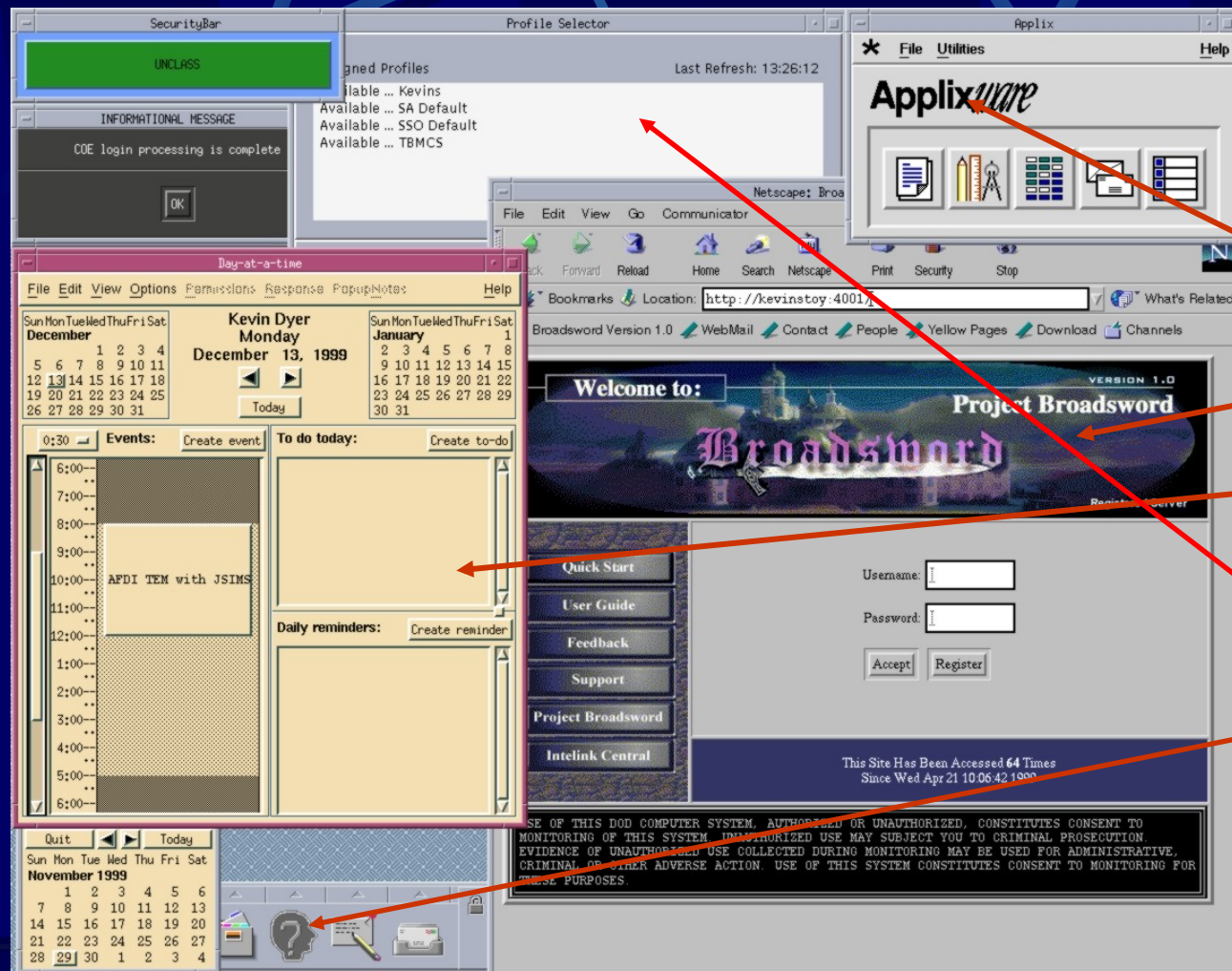
DII COE KERNEL

nt

**Operating
System**



What is AFDI? (continued)



**UN-Segmented
Apps run under
AFDI Sessions
(Interoperability
mixed environm
during transition**

**Segmented Apps
Continue to run
under COE Prof**



AFDI Timeline

- Initially proposed as “Phoenix” prior to the DoDIIS Interop in San Antonio, 1998
 - Proposal was rejected by the DoDIIS SIMO and ERB
- Concept modified and briefed again by the 497th in June 1999 to the ERB, DISA, SPACECOM and EUCOM
 - Briefed as the DoDIIS Common Operating Infrastructure (DCOI) to the DRB in June 1999
 - Briefed, voted-on and majority approved by the DMB in July 1999
 - No funding line approved by DIA, Army, Navy
 - Air Force re-names program AFDI and funds all of it





Quick AFDI Status

AFDI V1.0 Security testing AFRL February 00

- Participants include NSA, DIA, Air Force, Navy, Mitre/AFRL Penetration Team
 - 5 CAT 1 Security PR's fixed prior to Beta II
 - 3 CAT 1 findings by Penetration Team

AFDI V1.0 SCI Certified at SPACECOM Beta II first week of April 00

Installation at PACOM June 00

- Integration with full suite of JICPAC applications
- Integration effort will include the Integrated C4I Software Foundation (ICSF)
 - This is the new Common Operational Picture (COP)

* For complete status, wait for Capt Durante's





DoDIIS DII COE Transition Solutions

- AFDI
 - Takes CSE-SS infrastructures to DII COE in a migratory fashion
- DIA COTS Pilot Program
 - No transition from current DIA mandated infrastructure
 - No centralized funding for COTS
 - Non-Segmented environment
 - Not interoperable with GCCS/GCSS



DoDHS DII COE Transition Solutions (continued)

- Vanilla DII COE “out of the box”
 - Not SCI accredited
 - No transition from current infrastructure



DoDIIS DII COE Transition Solutions (continued)

- Bottom line



AFDI is the only game in town



The “Bigger” AFDI Picture



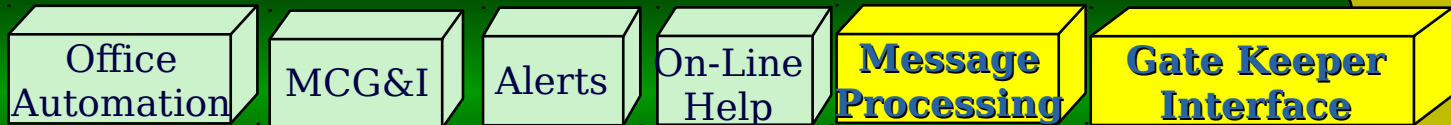
What is the Bigger AFDI Picture?

- Aligns all Air Force infrastructure programs under one infrastructure umbrella
 - AFDI = secure workstations, infrastructure management
 - GateKeeper/GateKeeper Interface(s) = data access
 - ISSE Guard/TTA = controlled interface for GateKeeper data access across security domains
 - Messaging & DMS archive = solution(s) developed... jury still out... stay tuned

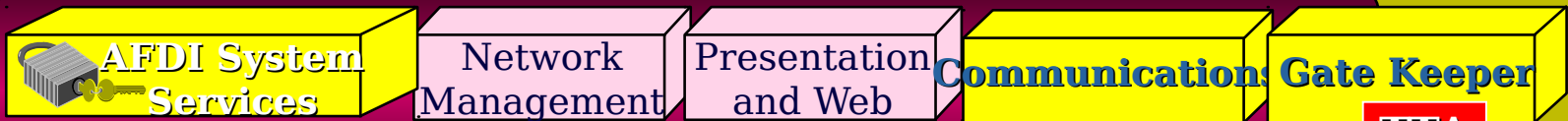


The "Bigger" AFDI Picture

COE



COMMON SUPPORT APPLICATIONS



INFRASTRUCTURE SERVICES



DII COE KERNEL

Operating System

SHADE



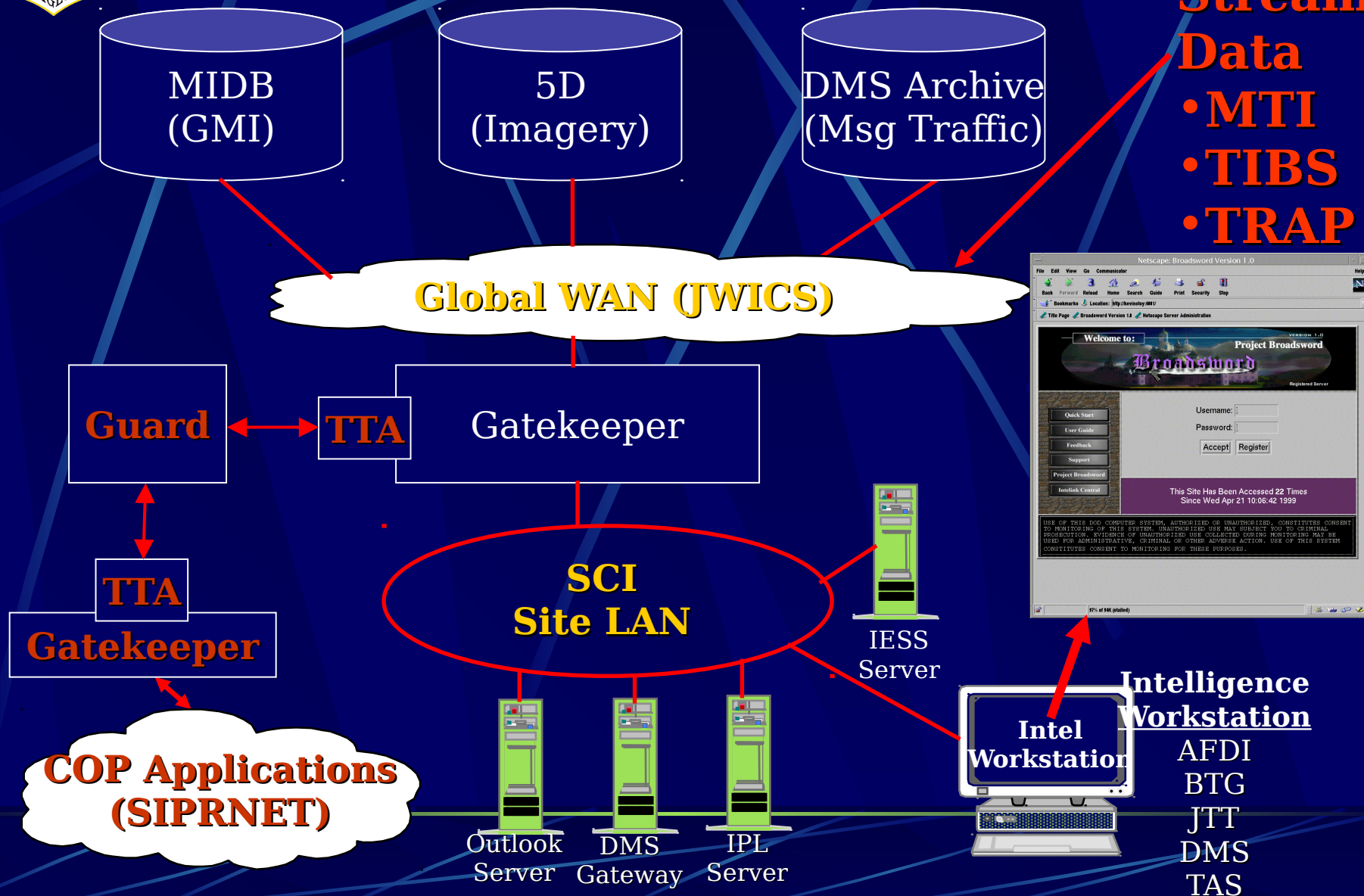
DATA ACCESS



The "Bigger" AFDI Picture

**Dynamic
Streaming
Data**

- **MTI**
- **TIBS**
- **TRAP**





Why?





Why?



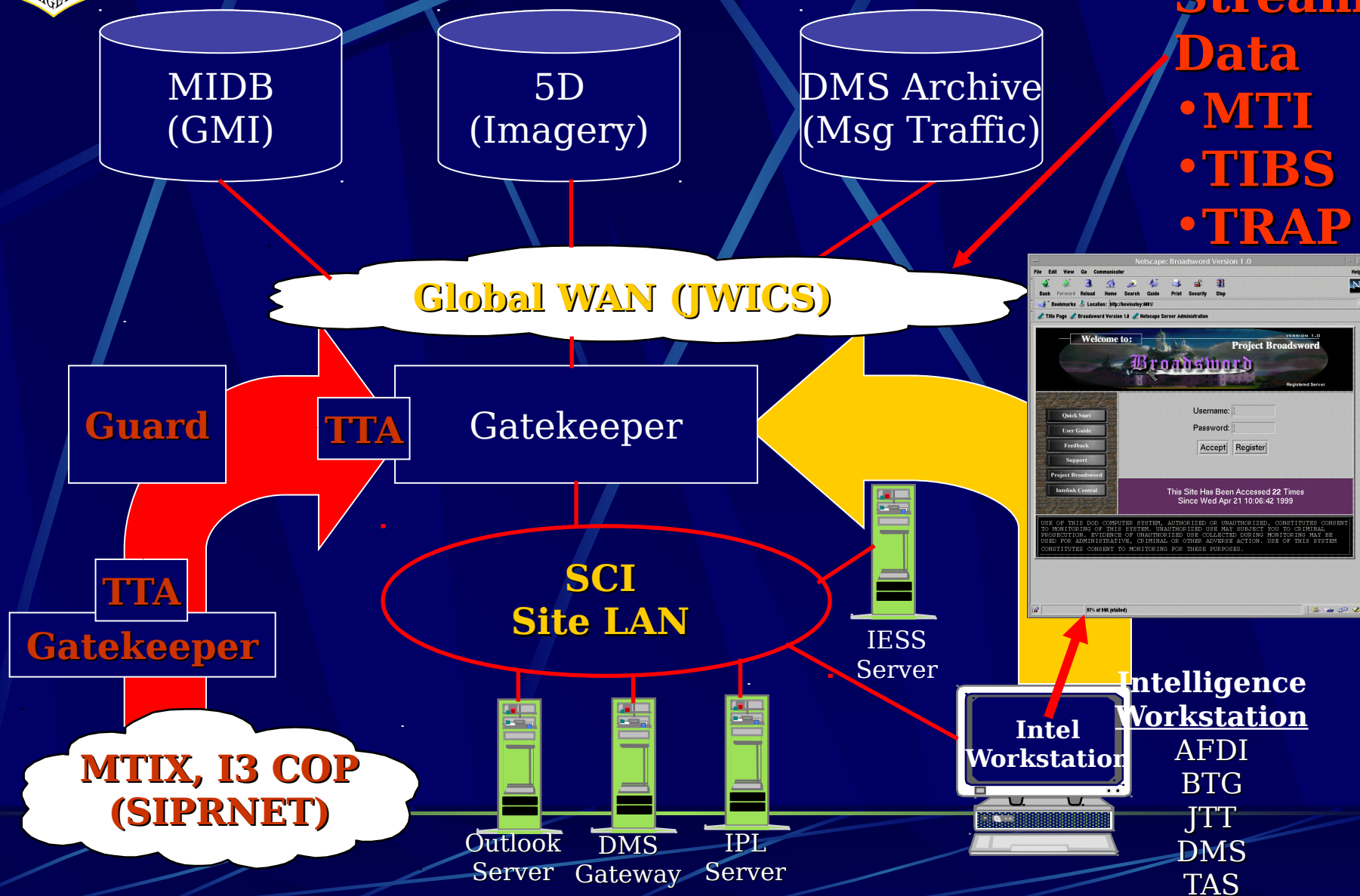
**Only (fill in your own %) of “mobile” targets were hit
due to correlation of diverse ISR data
across security domain systems**



AFDI Goals

**Dynamic
Streaming
Data**

- **MTI**
- **TIBS**
- **TRAP**





AFDI Goals (continued)



**Assurance that when an ATO
is built utilizing AF ISR systems...**



AFDI Goals (continued)

What's seen here...



**Assurance that when an ATO
is built utilizing AF ISR systems...**



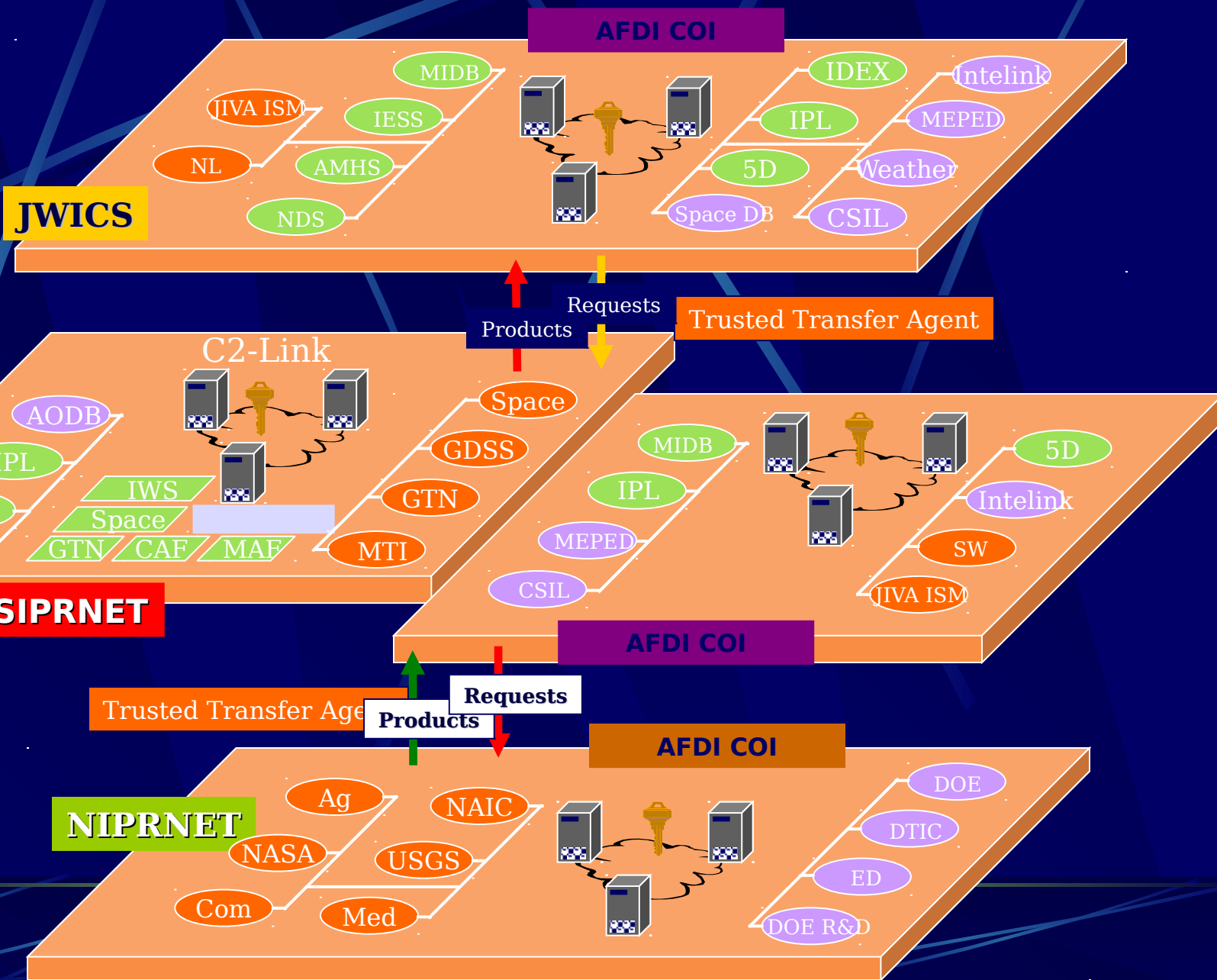
AFDI Goals (continued)

Matches what they see here!





AFDI Goals (continued)





How Far Along Are We?

- AFDI accredited
- Broadsword V3.0 with TTA and ISSE Guard Security Certified 2 weeks ago
- MTIX GateKeeper plug-in completed
- JEFX architecture accreditation this week (JEFX Spiral 2)
 - Includes AFDI, TBMCS, Broadsword 3.0, TTA, ISSE Guard, MTIX
- I3 database schema delivered to AFRL
 - I3 GateKeeper plug-in by JEFX Spiral 3 through experiment execution
 - The beginning of real-time/near real-time IFTW



How Far Along Are We?

(continued)



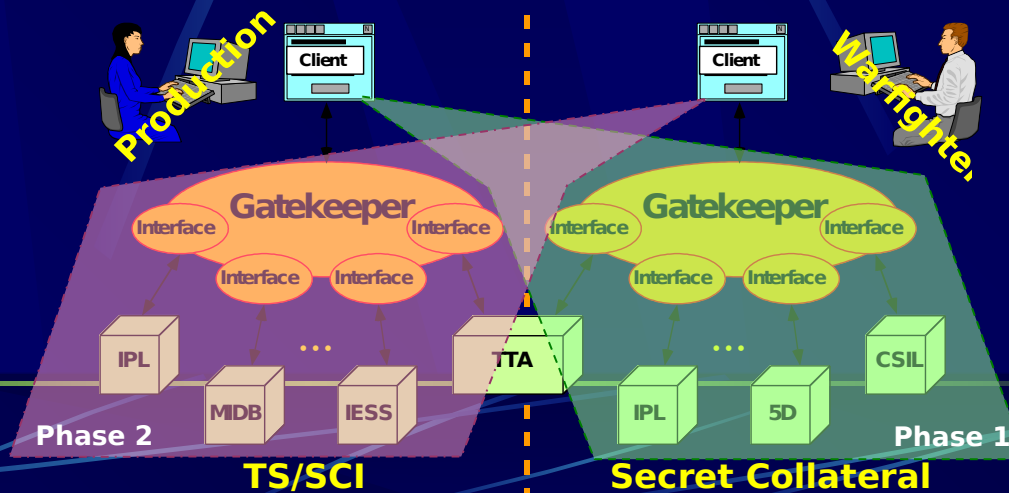
TTA



secure, bi-directional
information
exchange between
dissimilar security
domains
(information push)

secure
transparent
access to
distributed
information
sources (within a
single security
domain)

- Leverage the strengths of Broadsword & ISSE Guard to enable MLS information pull
- Phase 1 development focuses on *reach down*
- Phase 2 focuses on *reach up*

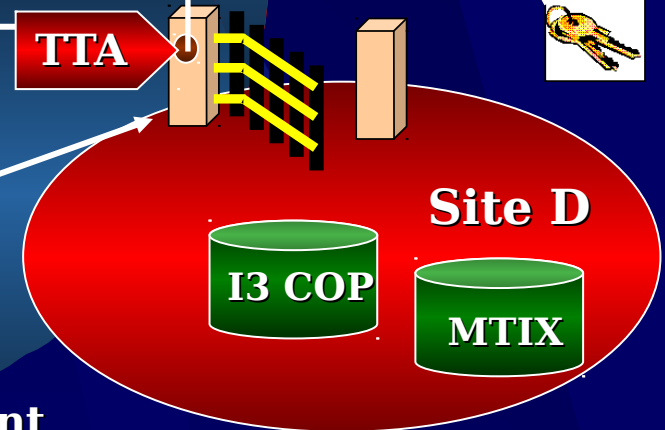
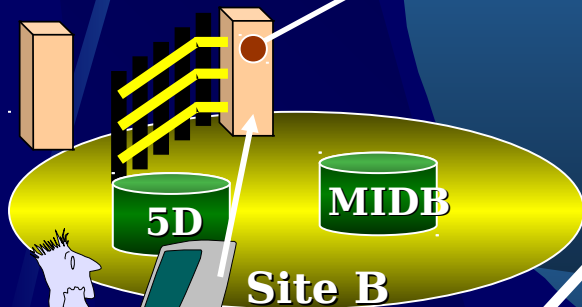
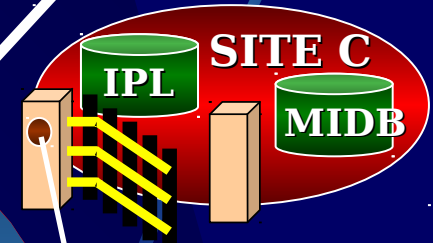




How Far Along Are We? (continued)

HIGH

LOW



Gatekeeper Client



Gatekeeper Client



- **Fully Integrated Infrastructure**

